

A low cost, secure radio communications system for UAVs Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)



ABSTRACT

sci_Zone, Inc is seeking to develop the LinkStar-AV, an inexpensive, secure, and reliable satellite based radio system for Unmanned Aircraft Systems (UAS). The LinkStar-AV architecture treats the radio system as a secure node on the internet through the GlobalStar satellite communications network, providing continuous coverage between the UAS and ground. Control and monitoring is provided by an adapted version of our QS/Vehicle Management System (VMS), which is used on a range of commercial aircraft and certified under DO-178B (Level D). The on-board flight processor of the LinkStar-AV radio manages software via the Xen Hypervisor providing an added level of reliability, safety and security from malicious attacks. For the Phase I research program we shall develop the prototype of the LinkStar-AV1p hardware, implement a secure link to stream data from the UAS to the QS/VMS ground control station via LinkStar, and develop a prototype of the communications and control software for use on UAS. We will also update QS/VMS ground server and flight software as required to allow it to work with the LinkStar-AV1p radio. The goal by the end of the Phase I is to demonstrate the technology and its feasibility, and present a plan for implementation and commercialization.

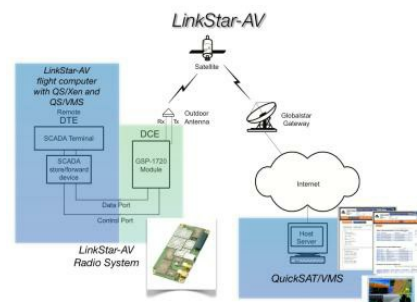
ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: The proposed innovations of the LinkStar-AV system have broad applications for both UAS and general aviation and commercial aircraft, near space balloons and satellites. The software architecture is flexible and can also be applied to other NASA based communications systems.

To the commercial space industry:

Potential Non-NASA Commercial Applications: The proposed innovations of the LinkStar-AV system have broad applications

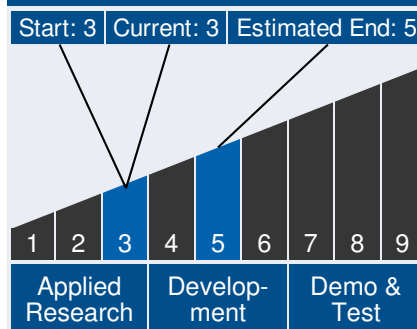


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Table of Contents

Abstract	1
Anticipated Benefits	1
Technology Maturity	1
Management Team	1
U.S. Work Locations and Key Partners	2
Technology Areas	2
Details for Technology 1	3

Technology Maturity



Management Team

Program Executive:

- Joseph Grant

Principal Investigator:

- Andrew Santangelo

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Project

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over a wide range of government, commercial, and research based vehicles - both UAS, general aviation and commercial aircraft. Due to the scope of the proposed effort we will have a wide ranging customer base including commercial UAS developers and fabricators, DARPA, the Navy, AFRL, GE Aviation, Rockwell Collins, Honeywell, NASA, partner subcontractors and the university community. In addition we see the "prosumer" community utilizing the LinkStar-AV technologies due to its added security and range.

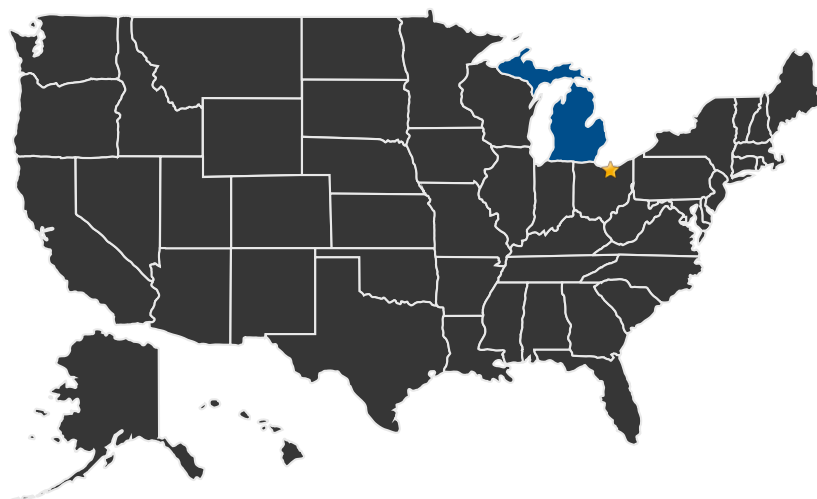
Technology Areas

Ground and Launch Systems (TA 13)

└ Mission Success (TA 13.4)

└ Anti-Jamming and Anti-Spoofing Communications for Range Operations (TA 13.4.1.9)

U.S. WORK LOCATIONS AND KEY PARTNERS



■ U.S. States
With Work

★ **Lead Center:**
Glenn Research Center

Other Organizations Performing Work:

- sci_zone (Holland, MI)

PROJECT LIBRARY

Presentations

- Briefing Chart
 - (<http://techport.nasa.gov:80/file/17935>)

Active Project (2015 - 2015)

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DETAILS FOR TECHNOLOGY 1

Technology Title

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